



do you have it?

<http://actingwhite.blogspot.com/2010/05/12-blacks-and-swagger-obama-too.html>



CF-Swagger

giving Cloud Foundry APIs their swagger back

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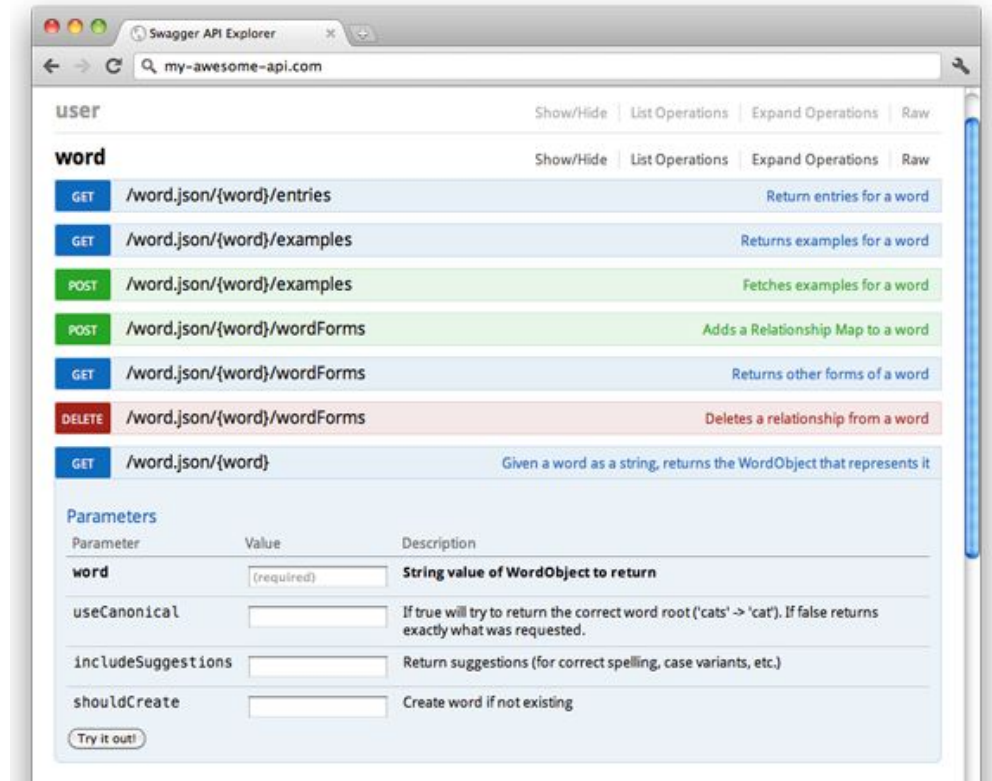
agenda

- what is swagger? what is CloudFoundry?
- what part of CF could use swagger?
- CF Service Broker APIs
 - docs,
 - server, clients,
 - tests and TCK
- value of TCK survey results
- what next?



What is Swagger?

- Not just a Pretty UI
- *A contract* for APIs
- A complete prescription to produce or consume an API
- Rich tooling support across lifecycle
- An Open Spec under the Linux Foundation



So you want to API?

As a consumer

- What do you call? Read the docs?
- Hope for a (decent SDK)?
- What are the parameters? What is the payload?

As a provider

- Accurate documentation is hard
- Making SDKs is hard
- Supporting users is really, really hard

And in general...

- Writing boilerplate code blows

Service Broker API v2.8

On this page:

- i. Document Changelog
- ii. Changes
 - Change Policy
 - Changes Since v2.7
- iii. Dependencies
- iv. API Overview
- v. API Version Header
- vi. Authentication
- vii. Catalog Management
 - Adding a Broker to Cloud Foundry
- viii. Asynchronous Operations
 - Sequence Diagram
 - Blocking Operations
 - When to use Asynchronous Service Operations
- ix. Polling Last Operation (async only)
 - Polling Interval
 - Maximum Polling Duration
 - Additional Resources
- x. Provisioning
- xi. Updating a Service Instance
- xii. Binding
 - Types of Binding
- xiii. Unbinding
- xiv. Deprovisioning
- xv. Broker Errors
- xvi. Orphans

- Design + Document your API interface
- Generate client & server code
- Let *you* write your business logic
- Iterate and repeat





what is swagger? interactive editor

```
1 swagger: '2.0'
2 info:
3   version: '2.5'
4   title: Service Broker API
5   description: >
6     The Cloud Foundry services API defines the contract
7     between the Cloud
8     Controller and the service broker. The broker is expected
9     to implement
10    several HTTP (or HTTPS) endpoints underneath a URI prefix
11    . One or more
12    services can be provided by a single broker, and load
13    balancing enables
14    horizontal scalability of redundant brokers. Multiple
15    Cloud Foundry instances
16    can be supported by a single broker using different URL
17    prefixes and
18    credentials. [Learn more about the Service Broker
19    API.](http://swagger.wordnik.com)
20 host: '127.0.0.1:8888'
21 basePath: /v2
22 schemes:
23   - http
24 paths:
25   /catalog:
26     get:
27       operationId: catalog
28       summary: Gets services registered within the broker
29       tags:
30         - catalog
31       description: "The first endpoint that a broker must
32       implement is the service catalog. Cloud Controller will
33       initially fetch this endpoint from all brokers and make
```

Service Broker API

The Cloud Foundry services API defines the contract between the Cloud Controller and the service broker. The broker is expected to implement several HTTP (or HTTPS) endpoints underneath a URI prefix. One or more services can be provided by a single broker, and load balancing enables horizontal scalability of redundant brokers. Multiple Cloud Foundry instances can be supported by a single broker using different URL prefixes and credentials. [Learn more about the Service Broker API.](http://swagger.wordnik.com)

Version 2.5

Filter operations by a tag:

catalog

service_instances

Paths

/catalog

GET /catalog

Summary

Gets services registered within the broker

Description

The first endpoint that a broker must implement is the service catalog. Cloud Controller will initially fetch this endpoint from all brokers and make adjustments to the user-facing service catalog stored in the Cloud Controller database.

Responses

Code	Description	Schema
		CatalogServices { list of services





what is swagger? spec details

```
1  swagger: '2.0'
2  info:
3    version: "2.5"
4    title: Service Broker API
5    description: |
6      The Cloud Foundry services API defines the contract between
7  host: localhost
8  basePath: /v2
9  schemes:
10    - http
11  paths:
12    /catalog:
13      get:
14        operationId: catalog
15        summary: Gets services registered within the broker
16        tags:
17          - catalog
18        description: |
19          The first endpoint that a broker must implement is the s
20        produces:
21          - application/json
22        responses:
23          "200":
24            description: successful operation
25            schema:
26              type: array
27              items:
28                $ref: "#/definitions/Services"
29          "400":
30            description: Invalid status value
```

```
32 /service_instance/{instance_id}:
33   parameters:
34     - $ref: "#/parameters/instance_id"
35   put:
36     operationId: create_service_instance
37     produces:
38       - application/json
39     consumes:
40       - application/json
41     tags:
42       - service_instance
43     description: When the broker receives a provision request f
44     summary: Provisions a service instance
45     parameters:
46       - name: service
47         required: true
48         description: Service information.
49         in: body
50         schema:
51           type: object
52           $ref: "#/definitions/Service"
53   responses:
54     "201":
55       description: Service instance has been created. The exp
56       schema:
57         type: object
58         $ref: "#/definitions/Dashbord_url"
59     "200":
60       description: May be returned if the service instance al
61       schema:
62         type: object
63         $ref: "#/definitions/Dashbord_url"
64     "400":
65       description: Should be returned if the requested servic
66       schema:
67         type: object
68         $ref: "#/definitions/Empty"
```





An ecosystem of tooling

The image shows a screenshot of the SwaggerHub website. At the top, there's a navigation bar with the SwaggerHub logo, a search bar containing 'APIs', a 'Show All' button, a 'GO' button, and a user profile 'fehgy'.

Below the navigation bar, a light blue banner displays the search results: '3 APIs found with "cf-demos"'. There are filters for 'TAGS' (a text input field) and 'SORT BY' (a dropdown menu set to 'Name (Asc)'). A checkbox for 'Published only' is also present.

Two green buttons are visible: 'Import Existing API' and 'Create a New API'.

The search results list two APIs:

- / apis / cf-demos / abacus-api / 1.0**
No Tags
Description: The Abacus Usage Metering and Aggregation REST API can be used by Cloud resource providers to submit usage data, usage dashboards to retrieve real time usage reports, and billing systems to retrieve the aggregated and rated usage data needed for billing. Cloud resources include services and application
Created: 12:33:45 pm Feb 24, 2016
Last modified: 08:26:13 pm May 19, 2016
Buttons: PUBLIC, UNPUBLISHED, Docker icon, GitHub icon, Download icon
- / apis / cf-demos / bosh-cpi / 2.5**
No Tags
Description: Bosh external CPI API - [2.5]
Created: 12:30:50 pm Feb 24, 2016
Last modified: 08:47:04 pm May 19, 2016
Buttons: PUBLIC, UNPUBLISHED, Docker icon, GitHub icon, Download icon



Why does this matter to CF?

- New services need...
 - Implement the CF broker API
 - Service implementation
 - A client SDK or docs for calling the service





what is swagger? demo

Demo





what is CloudFoundry?

- the basis of Bluemix
- a complete PaaS... it's also OSS
 - agnostic to lang. framework, cloud, and services
 - high-density container-based runtime with Diego
 - extensible via service broker model
- managed by foundation
- 50+ member companies and growing
- interactive set of components via APIs





cf-swagger

1. describe all CF APIs (eventually)
 - CF services: broker APIs
 - CF Cloud Controller: v3
 - UAA APIs
2. generate API docs
3. generate API client and servers (stubs)
4. generate test suites for API servers
5. generate Test Compatibility Kits






cf-swagger: service broker APIs

- API docs
- server generation
- extending the swagger spec
- prototypes for
 - unit and integration tests generation
 - Test Compliance Kit (TCK) generation





cf-swagger: why a TCK?

- some CF APIs are “plugins” or “extensions”
 - designed to allow many (1K+) providers
 - heterogeneous supporting lots of versions
 - tests are templated-able and tedious
- TCK is meant for
 - verifying compliance level of broker
-  - tell you what part of spec is not supported



cf-swagger: spec extensions

```
167 ▼      "/service_instances/{instance_id}/service_bindings/{binding_id}": {
168 ▼          "parameters": [{
169             "$ref": "#/parameters/instance_id"
170         }, {
171             "$ref": "#/parameters/binding_id"
172         }],
173 ▼          "put": {
174             "operationId": "serviceBind",
175             "x-version": "2.6",
176             "summary": "Binds to a service",
177             "description": "When the broker receives a bind request from the Cloud Controller,
178 ▼             "produces": [
179                 "application/json"
180             ],
181 ▼             "consumes": [
182                 "application/json"
183             ],
184 ▼             "tags": [
185                 "service_instances"
186 ▲         ],
```



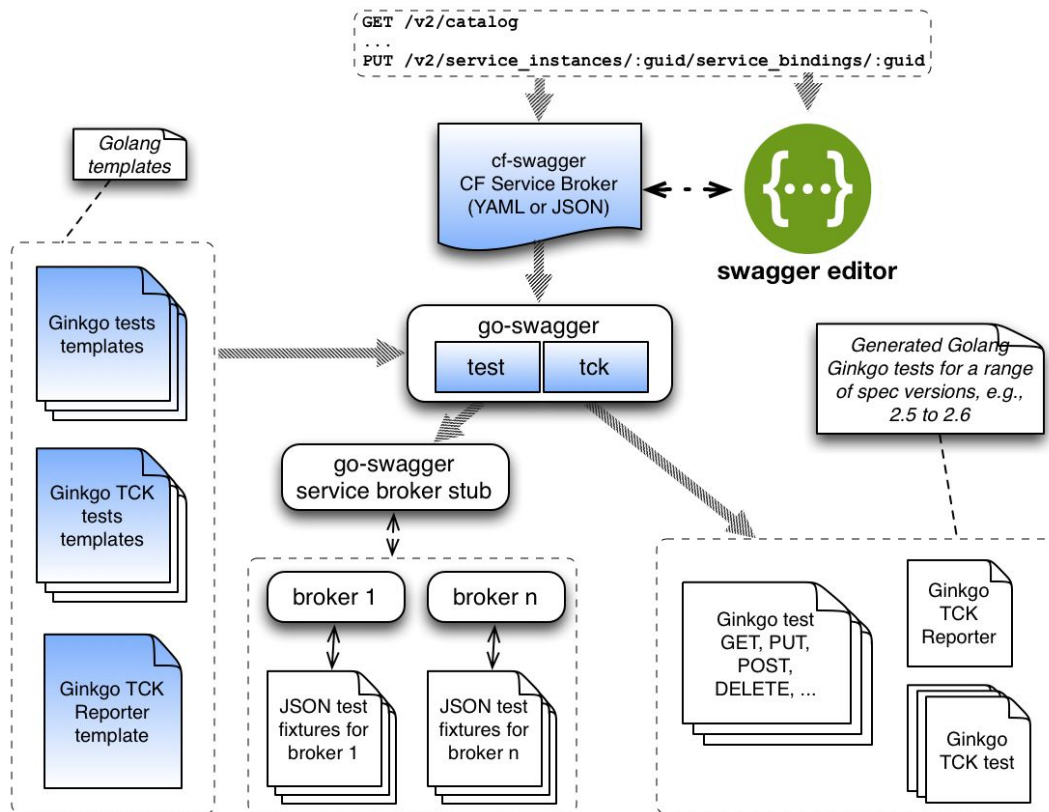
cf-swagger: spec extensions (cont.)

```
129 ▼      "delete": {
130          "operationId": "deprovisionServiceInstance",
131          "x-test-dependencies": "createServiceInstance"
132          "summary": "Deprovisions a service instance.",
133          "description": "When a broker receives a deprovision request
134 ▼      "produces": [
135          "application/json"
136 ▲      ],
137 ▼      "tags": [
138          "service_instances"
139 ▲      ],
```





cf-swagger: TCK generation high-level overview



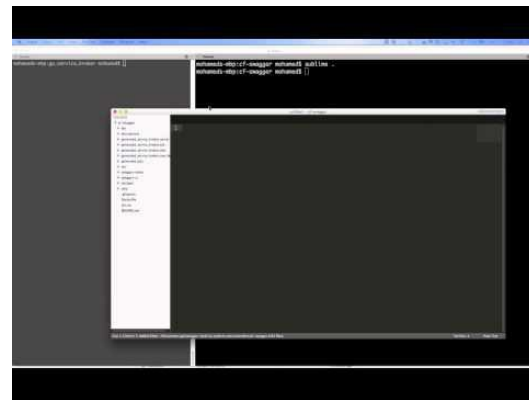


cf-swagger: demo 2

Demo 2

1. swagger spec extension for test and TCK
2. go-swagger test command
3. go-swagger tck command
4. running tests with real broker

Youtube Video: goo.gl/C8Nz5p





existing solutions for CF service broker TCK

- Bluemix: *servicebrokertest*
manually created

stuck at v2.3 of spec

- Others?

CATs services tests

manual, indirectly with CF CLI

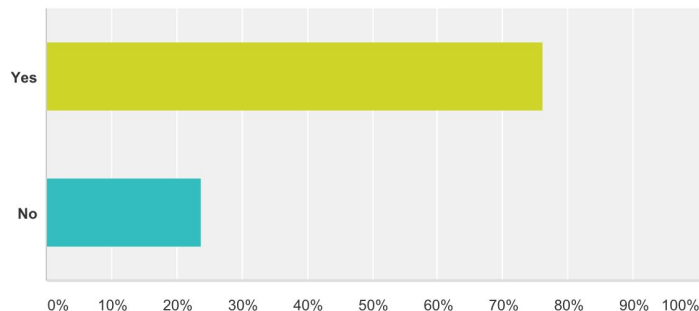




TCK utility: survey results

Do you currently test CF Service Brokers?

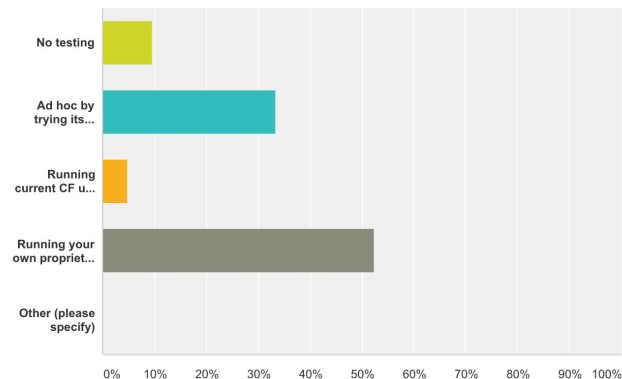
Answered: 21 Skipped: 16



Answer Choices	Responses
Yes	76.19% 16
No	23.81% 5
Total	21

How would you test a new CF Service Broker?

Answered: 21 Skipped: 16



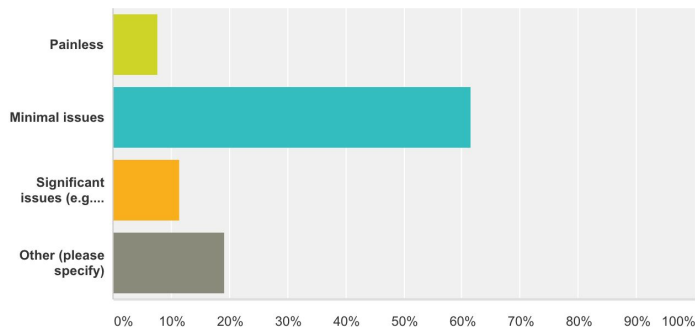
Answer Choices	Responses
No testing	9.52% 2
Ad hoc by trying its services	33.33% 7
Running current CF unit and integration tests (CATS or modified versions thereof)	4.76% 1
Running your own proprietary tests	52.38% 11
Other (please specify)	0.00% 0
Total	21



TCK utility survey results (cont)

What pain and issues (if any) have you experience when deploying and using a new service broker?

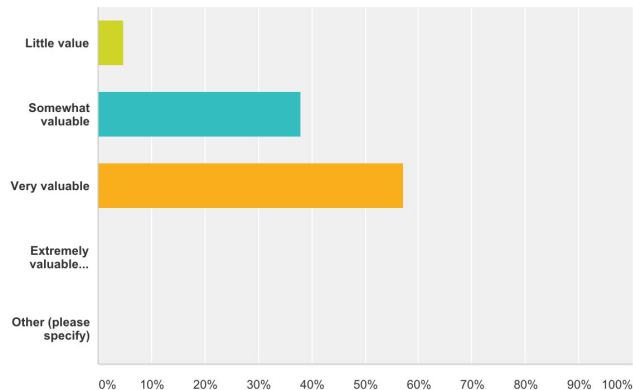
Answered: 26 Skipped: 11



Answer Choices	Responses
▼ Painless	7.69% 2
▼ Minimal issues	61.54% 16
▼ Significant issues (e.g., requiring redeploying apps and services)	11.54% 3
▼ Other (please specify) Responses	19.23% 5
Total	26

How valuable do you think would be a compliance test suite for CF service brokers? (e.g., verifying compliance to v2.6 of the spec)

Answered: 21 Skipped: 16



Answer Choices	Responses
▼ Little value	4.76% 1
▼ Somewhat valuable	38.10% 8
▼ Very valuable	57.14% 12
▼ Extremely valuable (willing to pay \$ to use it)	0.00% 0
▼ Other (please specify) Responses	0.00% 0
Total	21





what next?

TCK

- complete and harden the code generation
- submit code-generation changes to go-swagger

explore describing other CF APIs

- CC v3 (?)
- UAA, CF-Abacus, BOSH

socialize with CF community



thank you and QAs

감사합니다 Natick
Danke Ευχαριστίες Dalu
Grazie Thank You Köszönöm
Спасибо Dank Gracias
谢谢 Merci Seé
ありがとう Obrigado



credit: <http://knowyourmeme.com/photos/522333-language>



references

<https://github.com/maximilien/cf-swagger>



backup



CLOUDFOUNDRY

backup

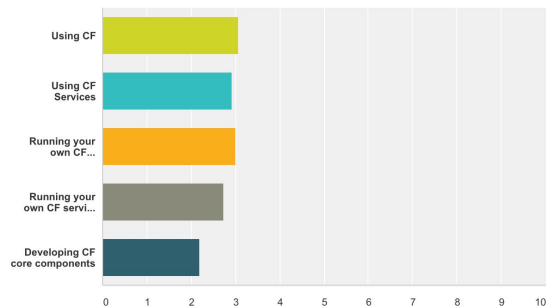




TCK utility: survey results

How familiar are you with Cloud Foundry (CF)?

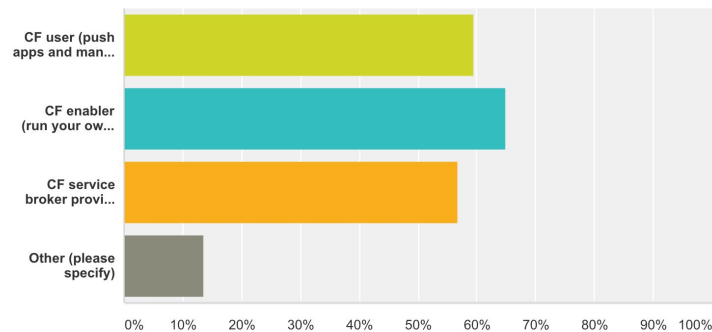
Answered: 36 Skipped: 1



	Not familiar at all	Somewhat familiar	Very familiar	Expert (I wrote the book)	Total	Weighted Average
Using CF	2.78% 1	8.33% 3	69.44% 25	19.44% 7	36	3.06
Using CF Services	2.78% 1	22.22% 8	55.56% 20	19.44% 7	36	2.92
Running your own CF environment	2.78% 1	19.44% 7	52.78% 19	25.00% 9	36	3.00
Running your own CF service broker	14.29% 5	20.00% 7	42.86% 15	22.86% 8	35	2.74
Developing CF core components	27.78% 10	38.89% 14	19.44% 7	13.89% 5	36	2.19

What role do you play in the Cloud Foundry (CF) ecosystem?

Answered: 37 Skipped: 0



Answer Choices	Responses
CF user (push apps and manage them)	59.46% 22
CF enabler (run your own CF installation)	64.86% 24
CF service broker provider (e.g., you have service brokers in any of the current CF installations)	56.76% 21
Other (please specify)	13.51% 5
Total Respondents: 37	





TCK utility survey results

Can you elaborate on the answer to question 3 (previous question)?

Answered: 11 Skipped: 26

Responses (11)

Text Analysis

My Categories

Categorize as...

Filter by Category

Search responses

Q

?

Showing 11 responses

When deploying apps that are service brokers, it's possible to delete the app, making it impossible to delete apps that had an instance from that service broker. Defensive checking against that would be useful.

9/16/2015 2:19 AM [View respondent's answers](#)

not much at the moment

9/15/2015 8:20 PM [View respondent's answers](#)

differecult to decide use which kind of runtime when create an new service instance, for example, use VM, or use Docker container, or just always return the same one.

9/15/2015 7:58 PM [View respondent's answers](#)

Working with partners that integrate with brokers, constant changes to API make integration deals hard to do.

9/15/2015 10:50 AM [View respondent's answers](#)

Automating broker registration without BOSH errands.

9/15/2015 10:43 AM [View respondent's answers](#)

We created a home grown framework to make it painless.

9/11/2015 8:25 AM [View respondent's answers](#)

No pain, as I understand the "philosophy" of it. Minimal issues: Typical bugs related to service broker development



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